Ellenbergerite $Mg_6TiAl_6Si_8O_{28}(OH)_{10}$

Crystal Data: Hexagonal. *Point Group:* 6. Rarely as elongated prisms, to 1 cm, with hexagonal cross section. Typically as anhedral inclusions in pyrope crystals.

Physical Properties: *Tenacity:* Brittle. Hardness = 6.5 D(meas.) = 3.15–3.22 D(calc.) = 3.10–3.17 Faint blue cathodoluminescence.

Optical Properties: Transparent. *Color:* Purple to lilac; some individuals exhibit smoky or pink cores. *Luster:* Vitreous.
Optical Class: Uniaxial (–). *Pleochroism:* Vivid; O = colorless; E = colorless to deep lilac.
ω = 1.655–1.679 ϵ = 1.654–1.670

Cell Data: *Space Group:* $P6_3$. $a = 12.255(8)$ $c = 4.932(4)$ $Z = 1$

X-ray Powder Pattern: Parigi, Italy.
3.11 (100), 3.54 (75), 2.653 (70), 3.06 (55), 2.183 (55), 3.61 (50), 2.337 (30)

Chemistry:

	(1)	(2)	(3)
SiO_2	39.13	32.61	40.11
TiO_2	3.96	0.58	6.67
ZrO_2	0.00	2.13	
Al_2O_3	24.91	20.64	25.52
FeO	0.19	0.41	
MgO	22.05	25.80	20.18
H_2O			7.52
P_2O_5	0.42	8.26	
Total	90.66	90.43	100.00

(1) Parigi, Italy; by electron microprobe, analysis of a most intensely colored crystal; colorometric analysis yielded H_2O 8.0(4)%. (2) Do.; a less intensely colored crystal. (3) $Mg_6TiAl_6Si_8O_{28}(OH)_{10}$.

Occurrence: As inclusions in pyrope porphyroblasts developed during high-pressure (25–30 kbar), medium-temperature (700 °C–800 °C) metamorphism of continental crustal rocks.

Association: Pyrope, kyanite, talc, clinochlore, rutile, zircon, sodic amphibole.

Distribution: In the Dora-Maira massif, Parigi, near Martiniana Po, Piedmont, Italy.

Name: Honors Professor François Ellenberger, Paris, France, for his geological work in the western Alps.

Type Material: University of Pierre and Marie Curie, Paris; National School of Mines, Paris, France; Institute for Mineralogy, Ruhr University, Bochum, Germany; National Museum of Natural History, Washington, D.C., USA, 163497.

References: (1) Chopin, C., R. Klaska, O. Medenbach, and D. Dron (1986) Ellenbergerite, a new high-pressure Mg-Al-(Ti,Zr)-silicate with a novel structure based on face-sharing octahedra. Contr. Mineral. Petrol., 92, 316–321. (2) (1988) Amer. Mineral., 73, 190–191 (abs. ref. 1).